

Title: Biological pumps of carbon, nitrogen, and phosphorus in the northern South China Sea  
Authors: Hung and co-authors  
Biogeosciences  
Minor revision

#### General comments

This paper presents the active and passive fluxes of carbon, nitrogen, and phosphorus in the South China Sea, and addresses the factors driving the spatial and temporal variations of biological pumps. The paper presents active fluxes which are seldom considered previously and can be useful globally on understanding the strength of carbon removal from the surface to the interior of the ocean. But before publication, some information should be clarified and some statements should be addressed.

- 1 The authors emphasize the importance of including active fluxes, but it is not clear why active fluxes includes gut, excretory, respiratory, and mortality fluxes by zooplankton and micronekton?
- 2 The authors estimate the excretory fluxes of dissolved organic C, N, and P by assuming organic products represent a constant fraction of the total amount of waste by-products released by migrators at depths. The constant fractions the authors used (0.24 for organic C, 0.53 for organic N, and 0.47 for organic P) are from references across from a long time differences (1963, 1997, 2000). It is difficult to understand the fraction of organic C is lower than those of organic N and organic P?
- 3 The biological pumps are higher in the study region than most of the comparison areas from the references. More statements are needed.
- 3 It is better to make clear when the observations were carried out, what kind of samples were collected, and water depth and trap depth of biological pumps. I try to get the related information and recognized it is so difficult.

#### Specific comments

Some abbreviations are not normal and used not often in the text. It is better to use the full name. For example, “Dongsha Atoll”, the N:D?

P16, Line 298-300, It is not easy to understand the sentences. Please make it clear.

P18, Line 300-338, for the elemental ratios of C:N, C:P, and N:P, the summary is not consistent with the data. In fact, P is not high but low, and the ratios of C:P and N:P are not lower than the Redfield ratio.

P27, Line 490, why the respiration and gut fluxes did not include N and P fluxes?

P37, Line 614, the ratio in passive flux (C:P=86.8) is close to the Redfield ratio? Please check the number or the statement;

Some spelling and printing should be checked carefully, here are some examples:

P2, Line 40, two points “..”, delete one;

P3, Line 76, add one blank in “around5000 m”;

P6, Line 116, add one blank in “theassociated”;

P7, Line 126, delete one blank between “methods” and “in seawater”;

P8, Line 157, add one blank;

Figure 11, the observation year should be also provided. The date expression should be clear.